

REMARKS

The Office Action mailed September 21, 2004, has been received and reviewed. Claims 1 through 8, 11 through 30, 34 through 39, and 42 through 68 are currently pending in the application. Claims 30, 34 through 39, and 63 through 68 stand rejected. An objection as been made regarding Claim 63.

Applicants note with appreciation the allowance of claims 1-8, 11-29, and 42-62.

Applicants have amended claim 63, and respectfully request reconsideration of the application as amended herein.

35 U.S.C. § 103(a) Obviousness Rejections

Obviousness Rejection Based on U.S. Patent No. 4,396,149 to Hirsch in view of U.S. Patent No. 5,053,774 to Schuermann et al.

Claims 30, 35 and 63 through 68 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Hirsch (U.S. Patent No. 4,396,149) in view of Schuermann et al. (U.S. Patent No. 5,053,774). Applicants respectfully traverse this rejection, as hereinafter set forth.

M.P.E.P. 706.02(j) sets forth the standard for a Section 103(a) rejection:

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or combine reference teachings. Second, there must be a reasonable expectation of success. Finally, **the prior art reference (or references when combined) must teach or suggest all the claim limitations.** The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). (Emphasis added).

Regarding claim 30, the Office Action indicates that the Hirsch reference teaches, "at least one electronic circuit **consisting of** a moisture sensing (column 6, lines 1-10) for measuring at least one moisture parameter of said at least one soil medium and transmit at least one data

signal.” However, Applicants respectfully assert that this is not what is recited in claim 30.

Claim 30, among other things, recites “at least one electronic circuit **consisting essentially of** a moisture sensing capacitor and an inductive loop.” Applicants respectfully remind the Examiner that, according to MPEP 2111.03, “[t]he transitional phrase “consisting essentially of” limits the scope of a claim to the specified materials or steps “and those that do not materially affect the basic and novel characteristic(s)” of the claimed invention.” A “consisting essentially of” claim occupies a middle ground between closed claims written in a “consisting of” format and fully open claims written in a “comprising” format.

The partially closed format of “consisting essentially of a moisture sensing capacitor and an inductive loop,” recited in claim 30, limits the scope of claim 30 to the moisture sensing capacitor, the inductive loop, and those elements that do not materially affect the basic and novel characteristics of claim 30. As recited in claim 30, a novel characteristic of the invention is that “an energy component of an excitation signal transmitted to the probe by the reader is sufficient to induce the at least one electronic circuit to **resonate substantially near a resonant frequency of the at least one electronic circuit.**” Therefore, elements that do not materially affect a resonant frequency of the moisture sensing capacitor coupled with the inductive loop are included in the scope of claim 30, but other elements are not included in the scope of claim 30. For example, and not limitation, wires may be included to connect the moisture sensing capacitor and inductive loop, or the moisture sensing capacitor and inductive loop may be coupled on a printed circuit board.

In the Hirsch reference “the voltage outputs of transducers 41 **modulate** (at modulator 42) the waveform transmitted via transmitter 43” (col. 4, lines 16-18). Therefore, the Hirsch reference does not teach or disclose “**a resonant frequency being a data signal,**” as recited in claim 30. Rather the data signal from the transducers 41 causes a modulation of the transmitter’s 43 frequency.

Similarly, while the Schuermann et al. reference creates a resonant frequency using a capacitor 134 and an inductor 132, the resonant frequency is not “a data signal indicating the moisture content of the soil,” as recited in claim 30. Rather, the resonant frequency is used as a carrier, wherein the data signal is modulated onto the carrier. As a result, the sensor of the

Schuermann et al. reference, even if it exhibited a variable capacitance, would not contribute in determining the resonant frequency of the at least one electronic circuit as recited in claim 30. Instead, the sensor would contribute in determining how the resonant frequency was **modulated** to indicate the data signal.

Therefore, the Hirsch reference and the Schuermann et al. reference, individually or combined, do not teach or suggest all the claim limitations, as required for a 35 U.S.C §103(a) rejection. Specifically, they do not teach or disclose **a resonant frequency being a data signal**, wherein the resonant frequency is generated by a moisture sensing capacitor and an inductive loop.

In addition, all the cited references include active elements requiring a power source (either battery, solar, or inductive coupling converted to a DC power source suitable for the active elements) for the active elements to perform their function. Without some teaching or suggestion that a probe might be made without this power source for the active elements, or made without active elements, it would not have been obvious at the time the invention was made for a person of ordinary skill in the art to invent an apparatus consisting essentially of passive elements.

Furthermore, even if the Hirsch reference and Schuermann et al. reference are combined with the Iltis reference, as applied below with respect to claim 34, a 35 U.S.C. §103(a) rejection of claim 30 is still improper for the reasons set forth below regarding the rejection of claim 34. As a result, claim 30 is now allowable and Applicants respectfully request the rejection of claim 30 be withdrawn.

Regarding claim 35, claim 35 depends from now allowable claim 30. As a result, claim 35 is now allowable and Applicants respectfully request that the rejection of claim 35 be withdrawn.

Regarding claim 63, claim 63 includes the same language of “at least one electronic circuit **consisting essentially of** a moisture sensing capacitor and an inductive loop,” as that of claim 30. As a result, the arguments above for claim 30, regarding the partially closed format of

“consisting essentially of a moisture sensing capacitor and an inductive loop,” also apply to claim 63. Therefore, claim 63 is allowable for the same reasons that claim 30 is allowable and Applicants respectfully request that the rejection of claim 63 be withdrawn.

Regarding claims 64-68, claims 64-68 depend from now allowable claim 63. As a result, claims 64-68 are now allowable and Applicants respectfully request that the rejection of claims 64-68 be withdrawn.

Obviousness Rejection Based on U.S. Patent No. 4,396,149 to Hirsch in view of U.S. Patent No. 5,053,774 to Schuermann et al. and in further view of U.S. Patent No. 4,683,904 to Iltis

Claims 34 and 36 through 39 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Hirsch (U.S. Patent No. 4,396,149) in view of Schuermann et al. (U.S. Patent No. 5,053,774) and in further view of Iltis (U.S. Patent No. 4,683,904). Applicants respectfully traverse this rejection, as hereinafter set forth.

Regarding claim 34, while the Iltis reference may include a moisture sensing capacitor in generation of a resonant frequency, as suggested by the Examiner, it does not include an inductive loop as part of the resonant frequency generation. Rather, the Iltis reference includes transistors, which behave as amplifiers and require a power source (i.e. battery 41). A resonant frequency generated by a moisture sensing capacitor, in cooperation with an amplification element may be substantially different from a resonant frequency generated by the passive elements of a moisture sensing capacitor in cooperation with an inductive loop.

Therefore, the Hirsch reference, the Schuermann et al. reference, and the Iltis reference, individually or combined, do not teach or suggest all the claim limitations, as required for a 35 U.S.C §103(a) rejection. Specifically, they do not teach or suggest a **resonant frequency being a data signal**, wherein the resonant frequency is primarily determined by **the capacitance of the moisture sensing capacitor operably coupled to the inductive loop**. Furthermore, an active element as taught by the Iltis reference, rather than an inductive loop as recited in claim 34,

materially affects the basic and novel characteristics of the claimed invention recited in claim 34, and is, therefore, not within the scope of claim 34 as limited by the “consisting essentially of” transitional phrase. All the cited references include active elements requiring a power source (either battery, solar, or inductive coupling converted to a DC power source suitable for the active elements) for the active elements to perform their function. Without some teaching or suggestion that a probe might be made without this power source for the active elements, or made without active elements, it would not have been obvious at the time the invention was made for a person of ordinary skill in the art to invent an apparatus consisting essentially of passive elements.

Regarding claims 36-39, claims 36-39 depend from now allowable claim 30. As a result, claims 36-39 are now allowable and Applicants respectfully request that the rejection of claims 64-68 be withdrawn.

Objections to Claim 63

Claim 63 stands objected to because of informalities. Appropriate correction has been made.

ENTRY OF AMENDMENTS

The amendment to claim 63 above should be entered by the Examiner because the amendments are supported by the as-filed specification and drawings and do not add any new matter to the application. Further, the amendments do not raise new issues or require a further search.

CONCLUSION

Claims 1-8, 11-29, and 42-62 have been allowed. Claims 30, 34-39, and 63-68 are believed to be in condition for allowance, and an early notice thereof is respectfully solicited. Should the Examiner determine that additional issues remain which might be resolved by a telephone conference, he is respectfully invited to contact Applicants' undersigned attorney.

Respectfully submitted,



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